Work Order ID 69969

Wednesday, May 25, 2011 9:07:02 AM

Item ID: D206-667-107BL **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Start Date: 5/25/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 6/30/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** [signature] **Date:** 11-05-25 **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Draw Nbr	Revision Nbr
IIN-D206-667	D

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
100	DOCUMENT CONTROL	0.00							
DC	**Memo**	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D206-667-107								
110	Pick Kit	0.00							
Packaging	Packaging								
Packaging	**Memo**	0.00							
Packaging									
120	BENDING MACHINE - CROSSTUBES	0.00							
CNC Bend 2	**Memo**	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D206-667-147 using CNC bender program								

[signature] for BG 11-6-29

① CHG 002

11.06.30

[signature] 11-6-21

[signature] 11-6-21

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 69969

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC15- Crosstube Dimensional Check	0.00				(40)			
QC	**Memo**	0.00 5/26/22							
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

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NOTE: Date & initial all entries

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Crosstubes	0.00							
Crosstubes	**Memo**	0.00							
Crosstubes	1-Drill holes & ream using drill Jig DT & DT as per Dwg D206-667-147. Drill all (3) top holes. 3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. 4-Drill pilot holes using drill Jig DT & DT as per Dwg D206-667-147. Drill only the top (2) holes. 5-Drill pilot holes as per Dwg D206-667-147.Drill only the top (2) holes. 6-Drill Fwd rivet holes using drill Jig DT as per Dwg D206-667-147. Note: Fwd side has 3x top holes. 7-Drill Aft rivet holes using drill Jig DT as per Dwg D206-667-147. 8-C'sink holes as per Dwg D206-667-147. Allow rivet to sit below surface to compensate for paint. 9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-147 Inside of Cuff(Donot engrave on outside of tube) 10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-147								

DP 11-6-23

SAD 11-06-23

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00				(1)			
HandFXtube	**Memo**	0.00	SAD 11-08-23						
Hand Finishing Crosstubes									
160	QC3- Inspect Part Finish	0.00							
QC	**Memo**	0.00	8 5/6/24						
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00	8 5/6/24						
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00				CL	11/06/27		①
Outsource2	**Memo**	0.00	P/O: 14376						
Outsource process - NDT	CROSSTUBES								
190		0.00							
Packaging	Packaging					CL	11/06/28		①
Packaging	**Memo**	0.00							
	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00				AT	11.06.27		
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	SprayPaint	0.00				1	11	06	27 (1)
SprayPaint	**Memo**	0.00							
Spray Painting	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time: 9:00 Fininsh Time: 1:00 PAINT: Start Time: 2:30 Finish Time: 3:30								
220	QC14- Inspect Spray Paint	0.00							
QC	**Memo**	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								

RT 11-06-28

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
Crosstubes	Crosstubes					ET	11	06-28	
Crosstubes	**Memo**	0.00							
Crosstubes	1-Install support using 0.03" to 0.06" thick layer of ~~magnobond~~ Prosea 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (2) Aft holes should be facing up. A/R ~~Magnobond~~ Prosea 6398 : M117960				USE PRUSEAL PTC				
	2-Install supports and clamps as per Dwg D206-667-147. Torque clamps to 80-100 in lb								
	3-Install nut plates as per Dwg D206-667-147. Touch-up rivet heads with Imron paint.								
240	QC5- Inspect part completeness to step on W/O	0.00							
QC						M	11	06	29 (1)
Quality Control	**Memo**	0.00							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector
11.06.21	Z30	USE PROSEAL TO BOND SUPPORTS, PER ATTACHED PROCEDURE	KT	11-06-28	1	11.06.21 QS1042	11 06 29

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Work Order ID 69969

Wednesday, May 25, 2011 9:07:02 AM

Item ID: D206-667-107BL
Revision ID:
Item Name: Crosstube Mid Fwd, Blue
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Required Date: 6/30/2011 **Req'd Qty:** 1.00
Reference:

Accept **Setup Start** **Stop**

Cust Item ID:
Customer:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Pick Kit	0.00							
Packaging									
Packaging	**Memo**	0.00							
							11/6/29		1
260	QC4- 100% Inspect kits for completeness	0.00							
		δ 11/06/29							
QC	**Memo**	0.00							
Quality Control									
270		0.00							
	Packaging								
Packaging									
Packaging	**Memo**	0.00							
							11/06/29		1

Identify and pack for shipping as per PPP D206-667-107
Location: _____
PPP Rev: draft

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 69969

Wednesday, May 25, 2011 9:07:02 AM

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
280	QC21- Final Inspection - Work Order Release	0.00					11	6/30	
QC	**Memo**	0.00							
Quality Control									

MC
11-06-29

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

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NOTE: Date & initial all entries

Picklist Print

Wednesday, May 25, 2011 9:07:08 AM

Work Order ID: 69969

Parent Item: D206-667-107BL

Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 5/25/2011 **Required Date:** 6/30/2011

Start Qty: 1.00 **Required Qty:** 1.00

Comments: revA 11.01.13 New Issue EC verified by:DD

Component Item ID / Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN5-30A BOLT		Purchased	No				Each	91.0000		4			
				Location		**Loc Qty**	**Loc Code**						
				ST339		91							
					116003	41							
					117514	50							
AN5-32A Bolt		Purchased	No				Each	176.0000		4			
				Location		**Loc Qty**	**Loc Code**						
				ST340		176							
					115589	51							
					117161	50							
					117514	50							
					117688	25							
AN5-7A Bolt		Purchased	No				Each	295.0000		10			
				Location		**Loc Qty**	**Loc Code**						
				ST337		295							
					116516	45							
					117313	100							
					117441	150							
AN960JD516 Washer	NAS1149D0563J	Purchased	No				Each	0.0000		18			

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

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NOTE: Date & initial all entries

Picklist Print

Wednesday, May 25, 2011 9:07:08 AM

Work Order ID: 69969

Parent Item: D206-667-107BL

Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 5/25/2011 **Required Date:** 6/30/2011

Start Qty: 1.00 **Required Qty:** 1.00

AN970-4	Purchased	No	Each	491.0000	12
Washer					

Location		Loc Qty	Loc Code
ST342		400	
	117795	400	
ST344		14	
	115936	14	
ST349		77	
	116900	27	
	117317	50	

D206-667-147TRN	Manufactured	No	Each	2.0000	1
Crosstube Assembly, Mid Fwd					

Location		Loc Qty	Loc Code
LG003	B70210	1	
	65111	1	
LG046		1	
	68086	1	

D2873-043	Manufactured	No	Each	40.0000	2
Nut Plate Assembly					

Location		Loc Qty	Loc Code
LG		36	
	68084	16	
	68801	20	
LG052		4	
	66898	4	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Work Order ID: 69969
Parent Item: D206-667-107BL
Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 5/25/2011 **Required Date:** 6/30/2011
Start Qty: 1.00 **Required Qty:** 1.00

D2873-045	Manufactured	No	Each	35.0000	2

Nut Plate Assembly

ST 11-06-29

Location	Loc Qty	Loc Code	
LG	20		
68800	20		x2
LG052	15		
65992	5		
67741	10		

D2891-1	Manufactured	No	Each	14.0000	2

2.25 Support

70734

ST 11-06-28

Location	Loc Qty	Loc Code	
LG052	14		
53773	12		
62595	2		

D3595-063-395	Manufactured	No	Each	29.0000	4

RUBBER CUSHION

Pulled from 3595-063-530

67185

ST 11-06-28

Location	Loc Qty	Loc Code	
LG055	29		
63368	1		
65361	28		

cut (4)0.063" X 3.95"

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Work Order ID: 69969
Parent Item: D206-667-107BL
Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 5/25/2011 **Required Date:** 6/30/2011
Start Qty: 1.00 **Required Qty:** 1.00

MS20601-AD4W8 Purchased No Each 237.0000 14
RIVET

Location	Loc Qty	Loc Code
LG	100	
108521	100	
LG051	137	
117106	37	
117381	100	

MS21042L5 Purchased No Each 1,243.000 4
Nut

Location	Loc Qty	Loc Code
ST300	1243	
116105	283	
116548	260	
117441	500	
117591	100	
117611	100	

MS21920-20 Purchased No Each 64.0000 4
Clamp (per MIL-DTL-8783C)

Location	Loc Qty	Loc Code
LG050	64	
116799	18	
117279	46	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

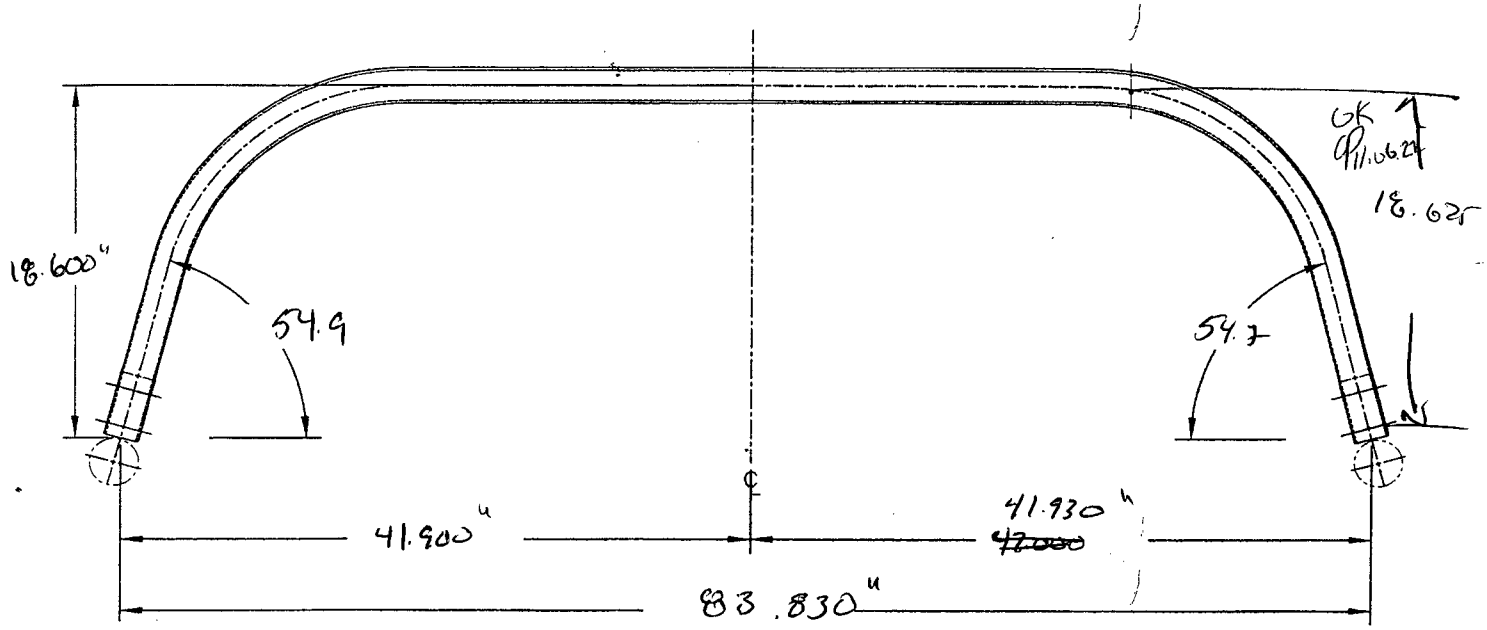
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	69969
Description: Crosstube	Part Number:	D206-667-107BL
Inspection Dwg: D 206-667-142 **Rev:** A		Page 1 of 1

Required Dimension	Min	Max
Height 18.470	18.340	18.600
1/2 Span 41.92	41.790	42.050
Angle 54.	54.	56
Total Span 83.84	83.58	~~84.100~~



Comments
Bent high. Acceptable CP 11.06.22

QC15 Inspection	S
Date	11/06/22

Rev	Date	Change	Revised by	Approved
		New Issue		

Item	Qty -147	Part Number	Description
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6002-115
 FINISHED LENGTH = 99.84±0.020
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART PART NUMBER "D208-667-147" AND BATCH NUMBER ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
7) WEIGHT: 15.0 lbs (-507 = 12.84)
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 69969

pd 11-05-25

RELEASED
2011 -05- 23

REV.	DESCRIPTION	BY	DATE
A	NEW ISSUE	CP	10.11.23

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D206-667-147	SHEET 1 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23		

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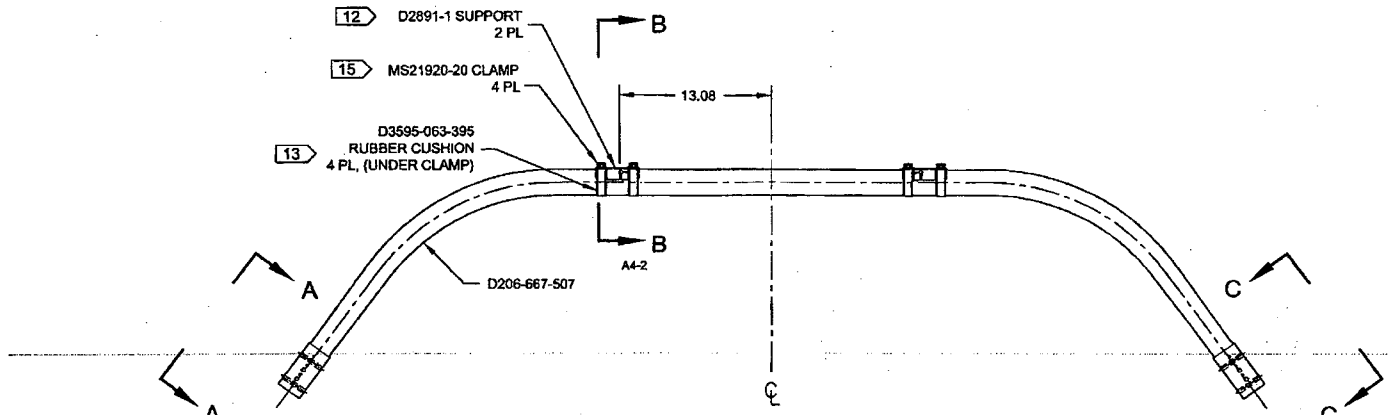
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

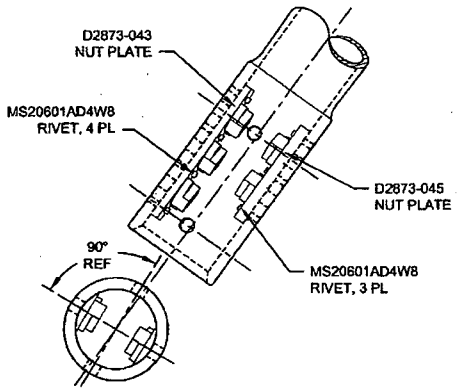
NOTE: Date & initial all entries



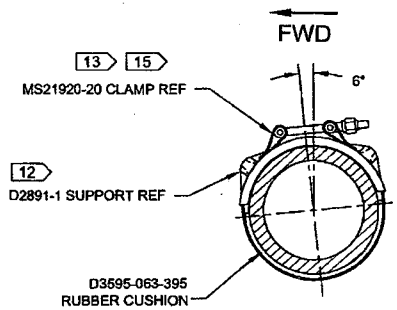
D206-667-147
ASSEMBLY DETAIL
(VIEW LOOKING FWD)

1449

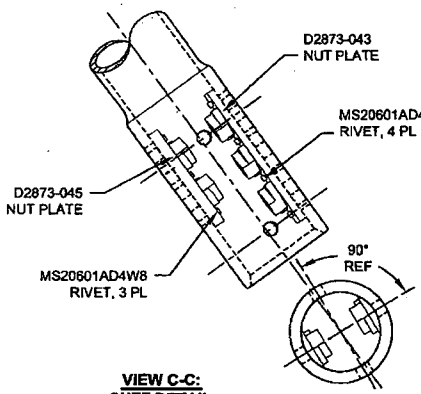
RELEASED
2011 -05- 24



C7-2 **VIEW A-A: CUFF DETAIL**
SCALE 4X



D5-2 **SECTION B-B**
SCALE 5X



C2-2 **VIEW C-C: CUFF DETAIL**
SCALE 4X

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. D206-667-147 REV. A SHEET 2 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASS'Y (206L MID FWD) SCALE NTS
DE APPR.		
DATE 10.12.23		COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THIS EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

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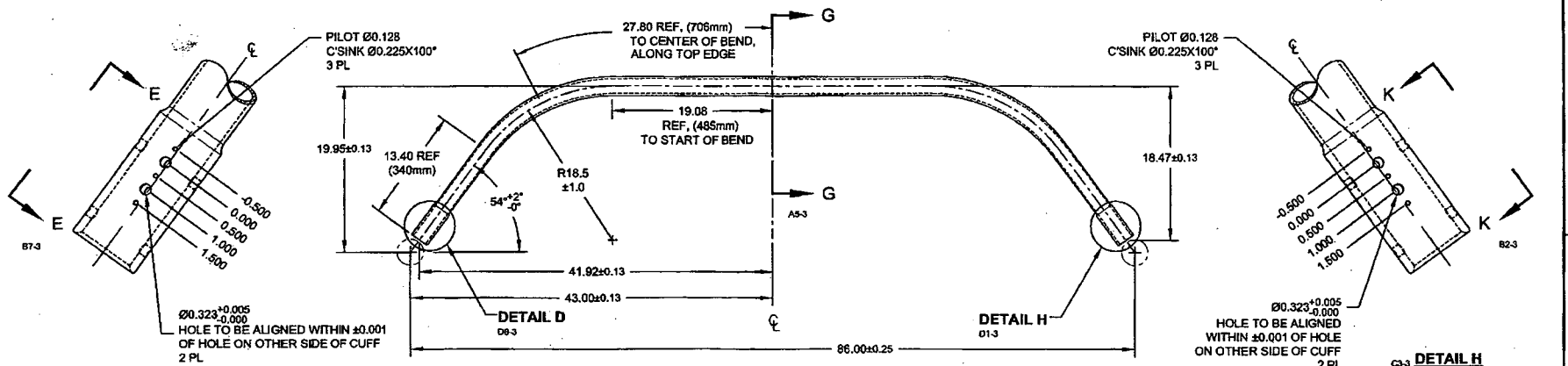
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

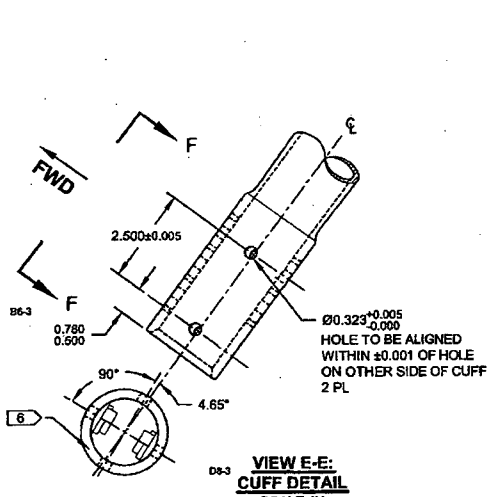
NOTE: Date & initial all entries



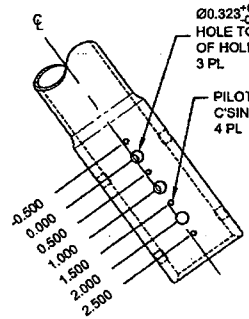
C6-3 **DETAIL D**
SCALE 4X
(VIEW LOOKING FWD)

C3-3 **DETAIL H**
SCALE 4X
(VIEW LOOKING FWD)

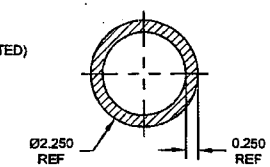
10 **D206-667-507**
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)



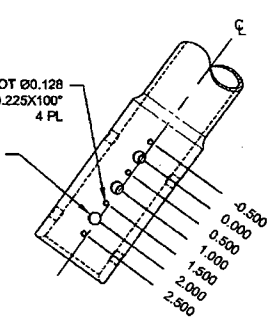
D8-3 **VIEW E-E:**
CUFF DETAIL
SCALE 4X



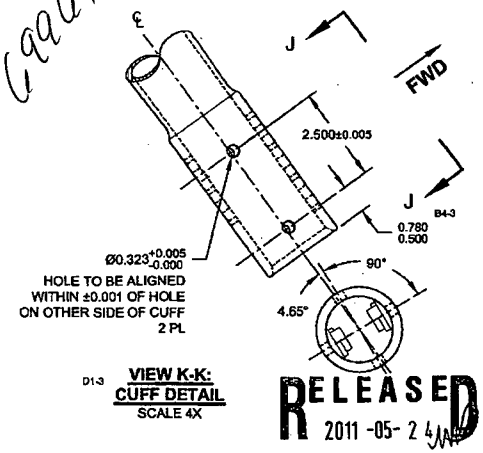
B7-3 **VIEW F-F**
(VIEW LOOKING AFT, ROTATED)



D4-3 **SECTION G-G**
SCALE 5X



B2-3 **VIEW J-J**
(VIEW LOOKING AFT, ROTATED)



D1-3 **VIEW K-K:**
CUFF DETAIL
SCALE 4X

C9949

RELEASED
2011-05-24

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. D206-667-147 REV. A
MFG. APPR.		SHEET 3 OF 4
APPROVED		TITLE CROSSTUBE ASS'Y (206L MID FWD) SCALE NTS
DE APPR.		
DATE 10.12.23		

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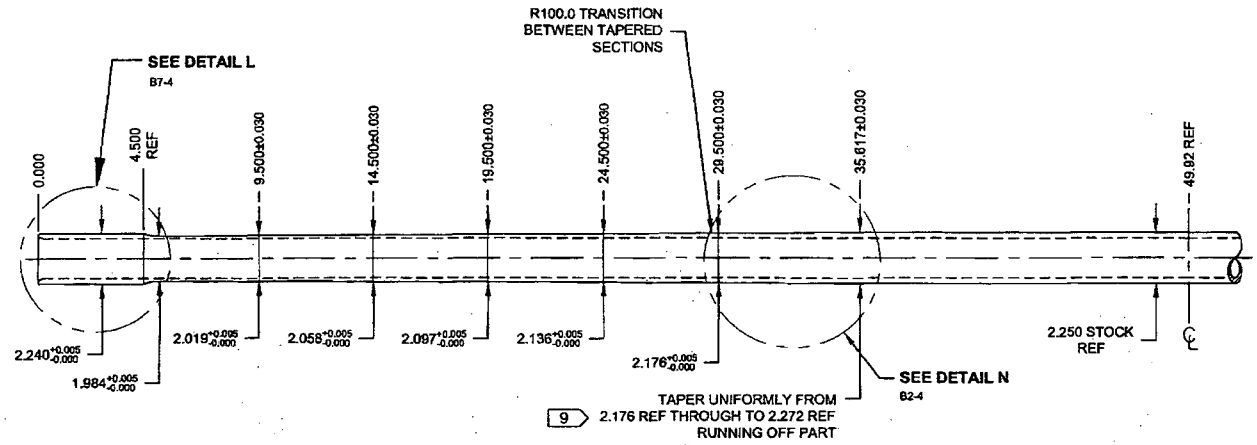
W/O:		WORK ORDER CHANGES					
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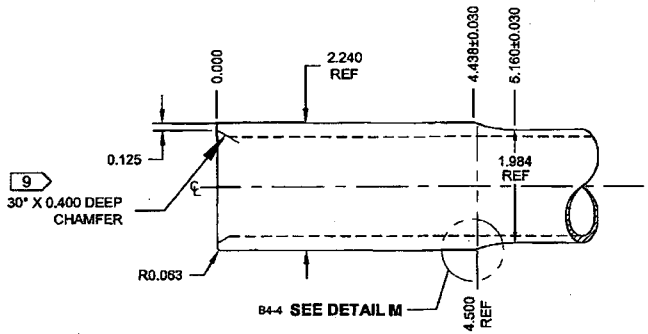
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

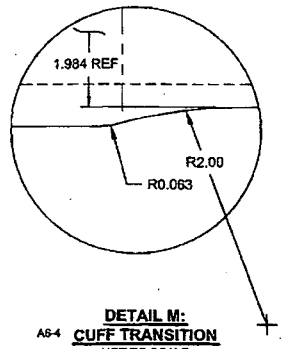
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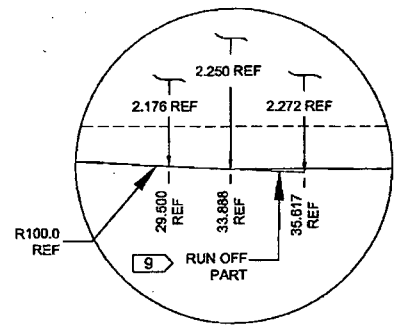
TURNING DETAIL



DETAIL L: CROSSTUBE CUFF
D7-4 NOT TO SCALE



DETAIL M: CUFF TRANSITION
A8-4 NOT TO SCALE



DETAIL N: TAPER RUN-OFF
C4-4 NOT TO SCALE

RELEASED
2011-05-24

DESIGN		DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED		DRAWING NO. D206-667-147 REV. A
MFG. APPR.		SHEET 4 OF 4
APPROVED		TITLE CROSSTUBE ASS'Y (206L MID FWD) SCALE NTS
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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Wednesday, June 15, 2011 3:05 PM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'; 'Linda Lacelle'
Subject: RE: Procedure for installing supports.

Hi Chris,

I agree with your procedure outlined below. It is our preference to leave the paint on the crosstube if we can for added corrosion protection (and for ease of manufacture). If Dan's final testing shows there is a big difference between a painted/unpainted crosstube, then we will switch to alodine only on the crosstube.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Wednesday, June 15, 2011 11:24 AM
To: 'David Shepherd'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'
Subject: RE: Procedure for installing supports.

David,

Can I confirm that this is the agreed procedure for all newly manufactured tubes with off-center supports:

- Scuff paint under support, clean with MEK
- Completely remove any finish on support (if present), scuff bottom surface of support, clean with MEK
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg
- Clean up excess proseal
- Let cure for 72 hours after installation, recheck torque.

Chris

From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: Tuesday, June 14, 2011 10:59 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'
Subject: RE: Procedure for installing supports.

Made a couple of small changes.

- Remove finish on xtube in area of support down to alodine finish.
- Touch up alodine on xtube in affected area
- Completely remove any finish on support, scuff bottom surface of support
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg
- Clean up excess proseal
- Touch up paint finish as req'd per QSI 005
- Let cure for 72 hours after installation, recheck torque.

ACUREN

LIQUID PENETRANT TEST REPORT

P- 05619

PAGE 1 OF 1

CLIENT: DART AEROSPACE
ATTENTION: LYDIA CHANTALE / JASMATT
ADDRESS: 270 ABERDEEN ST - HAWKESBURY, ON
DATE: JUNE 27/2011 TIME: AM ☑ PM ☐
ACUREN JOB NO.: 138-11-02148
PO/WO NO.: 14376
WORK LOCATION: AS ADDRESS
ACCEPTANCE STD.: ASTM E 1417/E 1417M 033 REV./DATE: 2005
PROJECT: WET FLUORESCENT LIQUID PENETRANT ON 6 "CROSSTUBES" & 8 "SLEEVES"
ITEM(S) EXAMINED: SEE BELOW

JOB DESCRIPTION | PROCEDURE NO. LT-003 REV./DATE 2008 | TECHNIQUE NO. LT-002 REV./DATE 2008
PART NO.: | MATERIAL: ANODIZE ALUMINUM | THICKNESS: N/A
SCOPE: PERFORMED A WET FLUORESCENT L.P. INSPECTION ON 100% OF THE EXTERNAL SURFACE ON ITEMS MENTIONNED BELOW

TEST DETAILS

METHOD	☑ FLUORESCENT	☑ VISIBLE		☑ WATER WASH	☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX			BLACK LIGHT S/N 13798	☐ OUTPUT > 1000 μ W/CM² ☑ AMBIENT < 2 fc
PENETRANT	ZL-67	MINIMUM DWELL TIME	10 MIN.	LIGHTING EQUIP.	☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT>100 fc @ SURFACE
PENETRANT REMOVER	H₂O	MINIMUM DRY TIME	>10 MIN.	OTHER	
DEVELOPER	SKD-S2	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N	CAL DUE DATE AUG/2011
DEVELOPER TYPE	☑ NON AQUEOUS	☐ AQUEOUS	☐ DRY		

TEST SURFACE

SURFACE CONDITION	☐ AS GROUND	☐ AS WELDED	☐ MACHINED	☐ SHOT BLASTED	☑ CLEAN BARE METAL
SURFACE TEMPERATURE	☐ < - 4°C/ 20°F	☐ - 4°C/ 20°F TO 10°C/50°F		☑ 10°C/50°F TO 52°C/125°F	☐ > 52°C/125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

1	SLEEVE(S)	W.O. ID 69034	✓	ITEM ID	D389-1
2	CROSSTUBE	W.O. ID 69966	✓	ITEM ID	D206-667-207BL AFT
3	"	W.O. ID 69967	✓	ITEM ID	D206-667-207BL AFT
4	"	W.O ID 69968	✓	ITEM ID	D206-667-107BL FWD
5	"	W.O. ID 69969	✓	ITEM ID	D206-667-107BL FWD
6	"	W.O. ID 70196	✓	ITEM ID	D212-664-101 FWD
7	"	W.O. ID 70197	✓	ITEM ID	D212-664-101 FWD

NO RELEVANT INDICATION WAS DETECTED AS PER APPLICABLES STANDARDS

FT 11-06-27

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	Matthew Murdoch (PRINT)	Matthew Murdoch (SIGNATURE)	DTR # E446138
TECHNICIAN (SIGNATURE):			REPORT REVIEWED BY:
NAME (PRINT):	JAMES DESROSIERS		NAME / INITIALS
	1ST TECHNICIAN	2ND TECHNICIAN	
	CGSB LEVEL 2 SNT LEVEL 2	CGSB LEVEL — SNT LEVEL —	
	CGSB REG. NO 3049	CGSB REG. NO —	

WHITE – CLIENT COPY CANARY – OFFICE COPY PINK – TECHNICIAN COPY GOLD – OFFICE COPY